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SCIENCE NEWS LETTER

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DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE - APRIL 12, 1947



"Hell's Back Gate"

See Page 236

A SCIENCE SERVICE PUBLICATION

Long-distance Television is twenty years old



At the 1927 demonstration, Dr. Herbert E. Ives explained the television system developed in Bell Telephone Laboratories

APRIL 7 is a notable day in communication history, for on that day in 1927 was the first demonstration of television over long distances. Large-scale images were flashed from Washington, D.C., by wire and from Whippany, N.J., by radio to a public demonstration in New York City. "It was," said a newspaper, "as if a photograph had suddenly come to life and begun to smile, talk, nod its head and look this way and that."

That was the first of many public demonstrations, each to mark an advance in the television art. In 1929 came color television, and in 1930 a two-way system between the headquarters buildings of A. T. & T. and Bell Laboratories. When the first coaxial cable

was installed in 1937, television signals for 240-line pictures were transmitted between Philadelphia and New York and three years later 441-line signals were transmitted. By May, 1941, successful experiments had been made on an 800-mile circuit.

End of the war brought a heightened tempo of development. Early in 1946 began the regular experimental use of coaxial cable for television between New York and Washington, and a few months later a microwave system for television transmission was demonstrated in California.

Transmission facilities will keep pace as a great art advances to wide public usefulness.

BELL TELEPHONE LABORATORIES



EXPLORING AND INVENTING, DEVISING AND PERFECTING, FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

MINING

Coal Mines Can Be Safer

Men, money, and enforcement of safety regulations can prevent mass loss of lives in mines. Falling roofs and explosions cause most fatalities.

► THE NATION'S coal mines can be made safer, but it is a job which will need men, money and stricter enforcement of mining safety codes.

Safety in coal mining means primarily good ventilation, the prevention of mine roofs from falling, dust-laying, and the use of proper explosives, handled only by experts, in the necessary blasting to loosen the coal from its seams. There are other necessary steps, but these are the most important.

Falling roofs in coal mines cause more fatalities each year than any other type of accidents. They are prevented, or at least lessened, by what is known as timbering or shoring. This means the placement of supporting columns in newly excavated cavities as rapidly as the cavities are made. It is an expensive job, requiring much skill, labor and timber. Constant inspection must be made to see if additional timbering is needed. Even with the best of shoring some roof falls are apt to occur. Men are sometimes injured also by debris loosened from the walls or faces on which the miners are working.

Explosions Rank Second

Explosions rank second as causes of mine fatalities. They may be of gas or of very fine coal dust. Ventilation is the method by which the explosive gases are removed, and ventilation also removes much of the coal dust that is suspended in the air. Powerful forced ventilation is required. Under the government mining safety code, giant blowers are stationed outside the mines to force fresh air down special conduits into the mine and to each group of miners. Separate conduits remove the foul air, together with any gases that have collected and with the suspended coal dust.

Settled dust, on the walls and roofs of coal mines, is often worse in an explosion than the minor amount of suspended dust in a properly ventilated mine. The shock waves that result from what might be a minor explosion drives this settled dust into the air where it in turn adds to the explosion.

Rock dusting is the best known preventive. Rock dust is a noncombustible,

specially treated pulverized limestone that is applied to the walls and roofs close behind where miners are working. It prevents the accumulation of dust on the surfaces. While limestone dust alone is sometimes used, a more modern practice is the use of a limestone dust that has been so treated that every tiny particle of it is coated with a water-resistant material. Such dust is sometimes scattered by automatic devices in the air ahead of an approaching explosion, in which case it is often effective in halting progress of the explosion.

The present federal mine safety code for bituminous coal mines, which most states now recognize, was prepared by the U. S. Bureau of Mines, representatives of the coal industry and the United Mine Workers of America headed by John Lewis. It was approved by the Secretary of the Interior on July 24, 1946. It is a code to guide mine operators; its enforcement ordinarily rests with state and local authorities.

While the coal mines are under federal administration, the head of this ad-

ministration probably has the necessary authority to enforce compliance with the code, but does not have the necessary staff. The functions of the Bureau of Mines cover inspection and the reporting of code violations only, and it needs a staff of 250 men, compared with 167 last year and additional inspectors called for in appropriations for the fiscal years 1946 and 1947. The job of this staff: inspecting the 7,000 regularly producing coal mines in the United States.

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PATHOLOGY

Atomic Fission Products Damage Brain Tissues

► BETA RAYS, which are among the products of atomic fission, can do serious damage to the tissues of the brain, Dr. Rosalind Novick of the University of Minnesota School of Medicine reported before the meeting in Montreal of the American Association of Anatomists.

She had made a close examination of injuries done to the brains of cats by beta rays given off by radium. The injuries were in sharply limited spots, with zones of decreasing severity as the distance from the ray sources increased. At the center there was dead tissue, then a zone of shrunken and darkened nerve cells, then cells that were acutely swollen, and finally uninjured tissue.

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MECHANIZED MINING—American coal miners use machinery electrically operated such as the machine cutter shown in the picture. Loosened electrical connections, or sparking caused by dust collection in the machine may cause explosions.

MEDICINE

Why People Are Alcoholic

Latest theory gives double cause: inherited metabolic pattern for handling alcohol plus environment that provides exposure.

► THE CHEMICAL constitution you inherited from your parents plus the environment in which you live determines whether or not you become a Lost Week-ender.

This theory or working hypothesis of the cause of alcoholism is presented by Prof. Roger J. Williams, distinguished vitamin researcher of the University of Texas, in the *Quarterly Journal of Studies on Alcohol* (March).

Jack Spratt and his wife of the nursery rhyme are used by Prof. Williams to illustrate part of his theory, that on the hereditary factors.

"Some people inherently have a strong appetite for fat and can tolerate large quantities of it. Others may have a distaste for fat but crave protein. Such different responses," Prof. Williams says, "must be due to differences in the metabolic machinery of the individuals."

By metabolic machinery, Prof. Williams means the complex mechanisms by which chemicals from food are used to create new body substance and energy. These processes go on by means of enzymes. The fundamental reason why vitamins, or at least many of them, are necessary to life is that they are the raw materials out of which the body must build its enzymes.

Every time an egg cell becomes fertilized and a new organism, chick, rat or human baby, comes into being, it gets from the parent cells the potentialities for producing each enzyme from necessary raw materials. It also gets the poten-

tiality for producing every detail of the metabolic machinery.

The kind of defect in this machinery which results in diabetes, involving failure to handle sugars and starches adequately, is part of a person's metabolic inheritance.

Inherited metabolic machinery also determines, Prof. Williams thinks, the way a person handles alcohol. It may determine whether a person will get violently sick after one drink, whether he gets a laughing jag, or turns morose after drinking, whether he can take an almost fatally big dose of alcohol without showing any sign of drunkenness, and whether or not he becomes addicted to alcohol.

Environment comes into the picture something like exposure to infectious disease. A person may be susceptible to measles, but never get it because he is never exposed to the measles germs. A person with an inherited metabolic machinery that would make him an alcoholic if he started taking alcohol will never become a Lost Week-ender if he never drinks. Most people can drink without becoming alcoholic because they lack this special machinery, just as most people can eat sugar and starches without becoming diabetic.

Prevention of alcoholism would be possible, Prof. Williams points out, if some way of detecting the alcoholic metabolic machinery could be discovered. He urged further research to learn at least what this machinery is.

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ANATOMY

Tense Tops Start Baldness

► YOU GET BALD because you get tense on top. A big head may be one cause of the tension. The tension also may be caused by external pressure, as from a tight hat, perhaps, or from the explosion of an atom bomb.

The basis of baldness is a matter of anatomy, Dr. M. Wharton Young, of Howard University, announced at the meeting of the American Association of Anatomists in Montreal.

The top of the head where baldness comes with age does not have as rich a blood supply as the muscular sides of the scalp, where the hair usually hangs on longest. Tension zones in the scalp cut down the blood supply to the top. These tension zones are associated with beginning baldness.

They may result from contraction of the muscles, from continued growth of

the skull, or from external pressure. In this connection Dr. Young pointed out that some of the atomic bomb victims developed a senile type of baldness.

Dr. Young produced persistent baldness in monkeys, like that seen in humans, by cutting out curved slices of their scalps and sewing the edges together. This pulled the scalp tight, set up tension areas and baldness followed.

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Death of Dr. Valentine

► DR. WILLIARD L. VALENTINE, editor of the journal *Science*, published by the A.A.A.S., died April 5 of a heart attack. He was also a trustee of Science Service.

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MEDICINE

X-Ray Sterility Offset

Gland treatment partially restores fertility to female mice exposed to radiation. Other reports from meeting of anatomists follow.

► TO A CHRONICALLY atom-jittery world there may be some significance in a report on the partial recovery of female mice after sterilization with X-rays, presented before the meeting of the American Association of Anatomists in Montreal by Dr. J. M. Essenberg of the Chicago Medical School.

As is well known, one of the worst effects of the intense burst of radiation, including X-rays, given off by an atom-bomb is the damage to sex glands that renders both men and women sterile, at least for a time. How much time is required for recovery, or even whether recovery occurs at all in some cases, has not yet been determined, nor is it known what treatment is called for in such cases.

Dr. Essenberg began his investigations on a mouse-sized scale. He exposed a number of young female rats to X-rays in doses heavy enough to cause sterilizing damage to their sex glands. Into the bodies of some of them he made a series of implants of bits of pituitary gland, which is a ductless gland in the head, whose secretion normally promotes the development of sex glands. To others of the sterile mice he gave a commercial preparation of such a sex-gland-promoting substance.

Examination of the ovaries of the sterilized mice thus treated showed some signs of resumption of normal function, though not full recovery. Further work will be required to determine if full recovery is possible under such treatment.

Sulfa Drug Cuts Fertility

In the meantime, one of the sulfa drugs used to combat germ diseases has been placed under indictment for causing lowered fertility, in a paper by Dr. Philip V. Rogers of Hamilton College, who spoke before the meeting.

Sulfaguanidine, in much larger relative quantities than would ever be used for medical purposes, was given to young laboratory rats in their food. Then males and females were placed in breeding cages, and results awaited.

In some cases, the pairs simply didn't

mate. In others, no offspring resulted. For the entire group, the average litter size was less than one-third what it had been when the same animals were bred on a drug-free diet.

Polio Can Distort Faces

We are used to thinking of poliomyelitis in terms of children hobbling about bravely with braces on withered legs; but it hits other parts of the body as well. Dr. William M. Rogers of the College of Physicians and Surgeons, Columbia University, told of cases of polio of the face that have come under his observation. The disease caused a wasting away of certain bones as well as of the muscles, offset by an overgrowth of muscles on the opposite side. The result was a marked distortion of the face.

"Shots" Without Needles

If you are one of those who shrink from the inevitable jab of the needle when a "shot in the arm" is necessary, you can take cheer from the new method announced before the meeting by Dr. Frank H. J. Figge and Dr. Robert P. Scherer of the University of Maryland School of Medicine. Taking a hint from accidents that have happened around diesel engines, where extremely fine, high-pressure oil jets from leaky injectors have pierced human skins, they have devised a way of doing the same thing intentionally with a considerable variety of medicinal preparations. They tried it out first on cadavers in the laboratory, then on living volunteers. They claim it gets the dose in deeper and through a larger volume of flesh than the conventional needle method; also (what probably counts most from the patient's point of view) that it hurts less.

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MEDICINE

Vitamin E Lack Makes Weak Spots in Heart

► LACK of vitamin E in the diet may be a cause of heart failure, if results

obtained with rabbits are of wider significance. Rabbits kept on diets lacking this vitamin developed weak spots in various parts of the heart muscle, it was reported to the meeting of the American Association of Anatomists by Dr. Arthur J. Gatz of Loyola University Medical School and Dr. O. Boyd Houchin of the University of Louisville School of Medicine.

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BOTANY

California Big Trees Can Be Young Even Though Huge

► CALIFORNIA Big Trees, as everyone knows, are the biggest and oldest things on earth. But they aren't all old, and they didn't get big over night; young ones are starting all the time, and growing up into lusty youth. Such a tree is shown in the illustration: it is a half-century old. In 1898 Prof. William E. Ritter of the University of California, later one of the founders of Science Service, took his young wife to see Yosemite National Park. The superintendent of the park gave Mrs. Ritter a seedling Big Tree, which she planted alongside of the then new Ritter residence in Berkeley. The seedling was in either its second or third season of growth, which would make it either 50 or 51 years old now.

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YOUNG TREE—This big tree is only 50 or 51 years old.

AGRICULTURE

Research Yields Billions

Besides its most important result in saving lives, agricultural research has given back to the nation about \$100 for every dollar invested in it.

By Dr. W. V. LAMBERT

Director of the Agricultural Research Administration

In a radio talk on "Adventures in Science" over the Columbia Broadcasting System.

► **BENEFITS** to the whole nation totaling thousands of lives and billions of dollars started down on the farm with scientific research.

Developed by research, most of the corn grown now is hybrid corn. It is produced by crossing in-bred strains of corn. It not only gives higher yields but has more resistance to disease and drought than the corn that used to be grown. It has what is called hybrid vigor. The special seed stocks are grown by farmers or companies skilled in their production.

To make present-day hybrid corn possible, the Department of Agriculture estimates that it took about \$10,000,000 worth of research, covering 30 years. That includes work done at the state agricultural experiment stations, as well as in the Department of Agriculture.

In the one year 1946 the dividend from the research on hybrid corn was three-quarters of a billion dollars.

At least one-fifth of the 1946 3,000,000,000-bushel crop can be traced directly to the use of hybrids.

Cereal Grains

Over the last quarter of a century, plant breeders at the agricultural experiment stations, as well as at the Department of Agriculture, have developed dozens of disease-resistant varieties of wheat, oats, barley, rye, and other grains. Based on records of damage caused by stem rust and other diseases, Agriculture scientists are pretty sure that these new varieties have added at least half a billion dollars to the farmers' pockets each year. And the same kind of progress has been made with sugar crops. But while geneticists are working to hybridize new varieties of grains, nature is busy hybridizing new strains of rust and smut to attack the grains.

The research on dairy cattle has paid tremendous dividends. The first cow-testing association in the United States

was started about 40 years ago. The farmers kept records of each cow's production, and they could quickly see which cows were paying for their board and which were not. These associations proved to be ideal places to put into practice what was learned from research. There are now over 1,000 of these Dairy Herd Improvement Associations. Last year the average production, as compared with 40 years ago, was almost 125 pounds more butterfat per cow. Over a million cows are in these associations.

But that's not all. Other farmers have applied these practices to their own herds. During the past 40 years there's been a gain of almost 50 pounds, in the average production of butterfat, for the 25,000,000 dairy cows outside the associations. And this means another billion pounds of butterfat a year.

DDT Development

As for DDT, the greatest value of DDT can't be measured in dollars and cents. In DDT we have the most powerful weapon ever possessed by man for the destruction of flies, mosquitoes, lice, and other insects that transmit human diseases. During the war without the use of DDT, there were many places in the world where our men could not have survived. And of course since the war, we've been using DDT against insects the farmer has to fight.

One of the most striking uses we've found for DDT on the farm is control of hornflies, stable flies, and the other flies that swarm around cattle in the summer time, such as the flies that used to make the old cow switch her tail and get it in the milk pail.

In order to find out how much the farmer really benefits by controlling flies on range cattle, the Department of Agriculture cooperated in a large-scale test with the State people in Kansas. A similar test was made in Florida on dairy cattle.

They found that in the range herd where the flies were controlled with DDT, the weight gain during the summer averaged 50 pounds more, per animal, than in a similar herd where no

spraying was done to control the flies. In the Florida experiment, with the dairy cows, we found that the cows gave 10% to 15% more milk when the flies were controlled.

About \$50,000 was spent in these experiments on DDT. There's already a profit of \$10,000,000, with a possibility of reaching at least \$100,000,000 every year.

The swine sanitation system is a simple practice now in use by most farmers who raise hogs. The pigs are farrowed on land that has not been used for hog pastures for at least a year. This keeps the little pigs from being infested with roundworms, and gets them off to a good start early in life.

About \$25,000 was spent on this research, but it's worth \$25,000,000 a year.

Parasite Control

Now there is a drug, phenothiazine, the most widely used of any drug for controlling internal parasites of livestock. This research cost us about \$10,000, and every year farmers are getting back \$10,000,000—in the form of thriftier animals that grow faster.

During the war, this drug treatment for sheep helped us over a critical shortage of surgical thread, made from sheep casings. But the casings from domestic sheep were so badly damaged by worms they couldn't be used—until the farmers began using phenothiazine. Agricultural research benefits not just the farmer, but the whole country, either directly or indirectly.

The best example probably is penicillin, but there's also the research on human nutrition—vitamins, minerals, proteins, and so on. The Department of Agriculture spent about \$100,000 on that penicillin research.

They found out how to produce penicillin on a large scale, through mold fermentations. But they couldn't have done it in such a short time if Agriculture chemists hadn't already known a great deal about mold fermentations.

It is one of the best examples to illustrate the need for continuity in carrying out research. If the work on molds had been stopped a few years previous to 1940, we might never have been able to help the English doctors who came over that summer asking for help in producing this great disease fighter. And the world might still be waiting for penicillin. That adds thousands of human lives to the dividends from farm research, lives that can't be measured in dollars and cents.

The annual added farm income due to just these examples of agricultural research is over \$2,000,000,000 each and every year. All this resulted from research investments that totaled over sev-

eral decades only a few tens of millions of dollars at the most. And don't forget the human lives saved and the more contented fly-free cows.

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BIOCHEMISTRY

Protein Synthesis Seen

Traced with radioactive sulfur, protein synthesis was carried out in the laboratory. Methionine was used with living tissue to synthesize proteins.

► THE FIRST direct observation of protein synthesis outside the animal body has been achieved through the tools of atomic science.

Two University of California scientists reported this pioneering step in the application of radioactive substances to the study of growth, cancer and other biological processes associated with the building up of organic compounds in living systems.

Surprisingly, the advance was made with radioactive sulfur, which has been available to researchers on the Berkeley campus for a number of years. The technique of study will have its widest application with radioactive carbon 14, which was only recently released to scientists by the Manhattan District.

The two researchers, Drs. Harold Tarver and Jacklyn Melchior, placed living animal tissue slices in a solution together with methionine labeled with radioactive sulfur. Methionine is one of about 25 amino acids, which are sometimes called the building blocks of all life.

The liver slices were slowly dying, with a breaking down of protein into amino acids. But so long as they lived they were building up some new protein, using the discarded amino acids. This process was demonstrated by the finding of labeled methionine incorporated into the protein of the tissue slices.

Proteins are formed by the linking together in chains of various amino acids. Drs. Tarver and Melchior found that the radioactive methionine was incorporated into the protein by the formation of peptide bonds, which are the typical linkage between the amino acid molecules in all proteins. In this linkage a carbon atom of one molecule is linked to the nitrogen atom of another molecule.

The scientists succeeded in their experiments after failure to demonstrate true protein synthesis using radioactive cysteine, another sulfur-bearing amino acid.

Dr. Tarver, reporting to the *Archives of Biochemistry*, expressed the opinion that the study, applied with radioactive carbon, provides an unexcelled technique for the study of the formation of the all-important peptide bond. For the first time biochemists are able to come to direct grips with the problem of protein synthesis.

The technique will also enable Dr. Tarver and other scientists to study the differences between protein formation in different tissues, for example between normal and cancer tissue.

Its use with sulfur will be limited, since only methionine and cysteine, of the amino acids, contain sulfur. However, all the amino acids have carbon atoms.

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RADAR

Aluminum Kite Reflector Is Used for Radar Target

► AN INGENUOUS target for radar reflection is being employed in connection with work perfecting automatic equipment to direct gun-fire against aircraft with greater accuracy than used during the war. Westinghouse scientists are responsible.

The target is a box-kite radar reflector built of light balsa wood and aluminum foil. It is held aloft some 600 feet above the earth by an anchored five-foot helium-filled balloon. Aluminum is employed because it is an unusually good reflector of the ultra-short waves used in radar. This is one of the reasons that tiny V-shaped strips of this metal were scattered in the sky by American bombers to blind the aircraft from enemy radar eyes. This so-called "radar counter-measure" was known as "window."

The great advantage of a high-suspended target in the development work is that its field is clear of all obstructions. Radar reflections from targets near the earth are subject to interference from ground-reflections or others from tall buildings, trees and hills. When the gun-aiming device is more nearly perfected, airplanes will be used for targets.

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CEILOMETER—Army Air Forces instrument measures the height of clouds by throwing up a ray of ultraviolet light which is scanned by a photo-electric cell unit. When a cloud breaks the beam, a "trace" registers on the recording instrument. The ceilometer accurately gauges cloud heights up to 10,000 feet.

TEXTILES

Cotton Fabric Has Fibers Of Glass to Resist Fire

► BEAUTIFUL draperies that defy fire are now available from the looms of Plymouth Fire-Guard Fabrics. They are woven of a combination of noncombustible, very fine glass fiber and flame-proofed cotton yarn.

While these fire-resistant fabrics are suitable for homes, they are designed especially for hotels, night clubs, schools and other places where people congregate and where considerable fire hazard exists. The first installation is in a new dining room and in a cocktail lounge in a New York Fifth Avenue hotel.

The fabric has been approved for use in New York by the proper city authorities. Before approval it was tested with the gas flame from a Bunsen burner. Practically no burning continued after the flame was removed.

The new fabric is available in a wide range of colors, designs and shades. It can be dry-cleaned, do not stretch, and can be cut, sewed and ironed as easily as all-cotton fabrics.

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ASTRONOMY

Thirteen Scientists Start Trip to Observe Eclipse

► THIRTEEN scientists, all hoping for clear weather and not at all superstitious about the number in the party, have left by plane for Brazil. Their ultimate goal is an "eclipse town" near Bocayuva, Minas Geraes State, Brazil, about 400 miles north of Rio de Janeiro.

Although the sun will not be hidden by the moon until Tuesday, May 20, these astronomers and physicists of the Army Air Forces-National Geographic Society Expedition are making their way to Bocayuva in time to get their outstanding array of new and valuable instruments set up and in working order.

At the camp site, picked last August and now equipped with many modern conveniences, the total eclipse will last three minutes 48 seconds. It is near the center of the path of the eclipse, that extends from near Santiago, Chile, to Kenya Colony on the east coast of Africa. Here the chances of clear weather are better than at most points along the path of totality.

Weather, which must be accepted "as it comes" on the day of the eclipse, plays an important part in the success or fail-

ure of the expedition. Of the dozen projects which the scientists hope to carry out, only three can be accomplished, clouds or no clouds. Radio observation of the changes which take place in the ionized layers of the earth's atmosphere is the most important of these, the others being largely incidental projects.

The scientific leader of the expedition is Dr. Lyman J. Briggs, chairman of the research committee of the National Geographic Society and retired director of the National Bureau of Standards. He and one or two other scientists will leave for Brazil at a later date.

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MEDICINE

Cancer Cells Are Not Sticky Which Makes Travel Easy

► SCIENTISTS have discovered why cancer cells can spread so easily and invade other parts of the body.

It is because they are not sticky, and thus can break away and travel.

Normal muscle, bone and brain and skin cells adhere to each other more firmly and can't roam around.

The new facts may explain some of the mysteries of metastasis, as the doctors call this disastrous spreading of malignant cancer cells. Dr. Dale Rex Coman of the University of Pennsylvania Medical School made the experiment, reported in *Science* (April 4).

Two of a pair of cancer cells can be pulled apart by one-third the force necessary to tear apart two normal skin cells. The stickiness of skin tumors that are not cancers is closer to that of normal skin cells.

The decreased stickiness, or adhesiveness, of cancer cells which makes it possible for each of them to strike out on its own is due to low content of calcium.

Once a cancer cell gets free of its neighbor cancer cells, it can ooze into surrounding tissues like an amoeba, the one-celled organism every high school biology student peers at through a microscope. Amoebae, cancer cells, and normal scavenger cells of the body move by extending little finger-like edges and then squirming themselves up to meet the new position in line with the finger.

The cancer cells may be helped in their progress to new parts of the body by a chemical which may act on the cement substance between cells to open a space for the cancer cell invasion. This chemical, called a spreading factor, is hyaluronidase.

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IN SCIENCE

MEDICINE

BCG Vaccine Against TB To Be Tested in Georgia

► COLUMBUS, Ga., and surrounding Muscogee County have been selected by the U. S. Public Health Service as the first community in which BCG vaccination against tuberculosis will be started as part of a long-range study program.

Preliminary tuberculin testing of the 16,000 children in the city and county schools is now under way. Following the tests, those children who show no sign of having been infected with tuberculosis germs will be given the vaccine which should protect them against the disease. The vaccine will be given to both Negro and white children when approval has been secured from their parents and physicians.

BCG was developed in the early part of the century by two French scientists, Albert Calmette and Camille Guérin. It is a strain of bovine TB germs which have lost their power of causing disease but are able to induce immunity to it.

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BIOCHEMISTRY

Date Tree Pollen Contains Chemical Like Sex Hormone

► SOMETHING having the same physiological effects as the female sex hormone has been discovered in the pollen of the date tree by two Egyptian scientists, Dr. Ali Hassan and Dr. M. Hassan Abou El Wafa of Fouad I University in Cairo. They report their results in *Nature* (March 22).

An extract prepared from the pollen was injected into laboratory rats. At the same time, ordinary female sex hormone was injected into another set of rats. Both sets responded with the same physiological reactions.

Although the substance has not yet been obtained in pure form for analysis, preliminary physical and chemical tests indicate that it is closely similar to sex hormone extracted from animal sources.

It is interesting to note that pollen, from which this female sex hormone has been extracted, is the male element in plant fertilization.

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THE FIELDS

PHYSICS

Non-Glare Rear View Mirror to Aid Drivers

► A NON-GLARE rear-view mirror, that will not annoy following drivers at night with dazzling reflections, is the invention on which W. H. Colbert of Brackenridge, Pa., and W. L. Morgan of Columbus, Ohio, have been granted patent 2,418,335, which they have assigned to the Libbey-Owens-Ford Glass Company. High reflecting power in rear-view mirrors is unnecessary; the inventors reduce the reflectivity of theirs by chemically spattering it with minute spots of lead sulfide.

Science News Letter, April 12, 1947

ARCHAEOLOGY

Shensi Pyramid Estimated To Be 2,000 Years Old

► THE GIANT pyramid reported discovered by an American aviator flying over Shensi province in China is in a land of pyramids, the heart of ancient Chinese civilization.

If the pyramid is located by exploring parties on the ground, it will probably never rival the famous pyramids of Egypt as a tourist sight. The Chinese pyramids of that region are built of mud and dirt and are more like mounds than the pyramids of Egypt, and the region is little-travelled.

American scientists who have been in the area suggest that the height of 1,000 feet, more than twice as high as any of the Egyptian pyramids, may have been exaggerated, because most of the Chinese mounds of that area are built relatively low.

The location, reported 40 miles southwest of Sian, is in an area of great archaeological importance, but few of the pyramids have ever been explored. Scientists who have sought to excavate in the region have had difficulties with the local authorities. Like the pyramids of Egypt, it is expected that the mounds of this area have been looted for centuries by the natives.

Pyramids, such as the one reported by the American flyer, are the tombs of ancient peoples, with the biggest pyramids containing the tombs of the kings or emperors.

In the same area but east of Sian, ancient capital of several Chinese dynasties, is the pyramid believed to be the tomb of Ch'in Shih Huang-ti, the emperor who built the Great Wall of China some 2,200 years ago.

Best estimates are that the newly "discovered" pyramid is at least 2,000 years old.

Science News Letter, April 12, 1947

MEDICINE

Vitamin B Treatment Aids Victims of Tick Disease

► DEATHS from Rocky Mountain spotted fever, a tick disease, may be wiped out by modern treatment including doses of one of the B vitamins, para-aminobenzoic acid, Dr. Samuel F. Ravenel, of Greensboro, N. C., declared in the Journal of the American Medical Association (April 5).

Rapid recoveries occurred in four out of five patients for whom Dr. Ravenel used the new treatment. The fifth patient also recovered, but almost died due to what Dr. Ravenel terms "improper handling" of the case as regards the use of para-aminobenzoic acid.

"The astonishing thing about these patients," Dr. Ravenel states, "was the amazing speed with which the temperature dropped, the rash faded and recovery ensued as soon as adequate concentrations of para-aminobenzoic acid in the blood were achieved."

One boy who might have been expected to be extremely sick for two to three weeks had a normal temperature and rapidly fading rash on the sixth day of treatment. An exceedingly ill, delirious child who, before the days of para-aminobenzoic acid treatment, would have been expected to have high fever for two weeks, had a normal temperature and rapidly fading rash on the fourth day of treatment.

The drug was given by mouth in a solution of sodium bicarbonate. A preparation of it that could be given by hypodermic injection at the start of treatment in unconscious or vomiting patients would be extremely helpful, Dr. Ravenel points out.

Para-aminobenzoic acid alone is not the "sole answer" to the problem of treating Rocky Mountain spotted fever patients, Dr. Ravenel points out. Supportive treatment in the form of fluids, other vitamins and salts should be given. Possible toxic effects of the drug and complications of Rocky Mountain spotted fever should be watched for.

Science News Letter, April 12, 1947

SOIL CONSERVATION

Rose-Bordered Fields Make Good Erosion-Check

► FARMERS' FIELDS may be edged in pink, in the Junes of years to come. Hardy, fast-growing, tough-stemmed roses are recommended instead of wire fences by the U. S. Department of Agriculture. Added beauty will come from the fact that in new erosion-checking field layouts the boundaries follow the curving contour lines of the hills, instead of running intolerantly straight and crossing at right angles, as wire fences too often do.

Most suitable species for hedge purposes, say Department botanists, is the multiflora rose. It is as hardy as the proverbial iron poker, and puts down strong, soil-retaining roots. Its stems are 20 times more spiny than barbed wire; they grow to a height of six or eight feet and never require pruning.

In addition to their dual principal job of keeping stray animals out of the fields and the soil in, rose hedges will also serve as shelter for birds and smaller animals. The rose hips, though scanty-pulped, have at least a minor food value: they are rich in vitamin C and are good for jelly-making.

Science News Letter, April 12, 1947

ENGINEERING

B-29 Is Flying Laboratory For Gas Turbine Testing

► AN ARMY bomber, a B-29 Superfortress, has found a peacetime job—it is now a flying laboratory, in use in Schenectady for altitude testing of aircraft gas turbine engines.

The use of flying laboratories has proved to be a safe and expedient way of conducting tests under altitude conditions, General Electric engineers stated, and more economical than establishing altitude wind tunnels. Their use has been highly satisfactory, they declare.

They explained that the powerful jet plants are installed as an auxiliary unit of the flying laboratory instead of a substitute engine. Flying laboratories in one type of plane or another have been used by General Electric since 1942. One great advantage over wind tunnel methods is that there is space for design engineers on the plane to observe operations under actual flight conditions. They also are provided with a means of learning problems attendant to flying.

Science News Letter, April 12, 1947

ENGINEERING

Coal Flows to Furnace

Powder-fine coal will power locomotives and heat homes. Special furnace and engine must be used but operating costs for locomotives will be lowered.

By A. C. MONAHAN

► COAL HAS WON another point in the battle of fuels. Coal as fine as powder, pulverized by bursting at a nozzle end, will power two new coal-burning gas-turbine locomotives and will be used in home heating. It flows to the firebox through hose or tube, requiring no more handling than oil. It burns almost completely.

The principal competitors of coal are fuel oil and gas. In favor of coal, in the battle of fuels, are its abundance, relative cheapness and wide distribution. In favor of fuel oil is its easy handling. American coal reserves are great enough to last for many centuries. Natural oil reserves face relatively early depletion. Manufactured products from coal and oil shale will supplement petroleum production, but their cost will be an important factor.

To keep coal in the top place as a fuel, two requirements must be met. One is to develop methods of combustion that will convert the full energy in the coal to useful work; the other is to develop coal-handling methods as easy as those employed in handling fuel oil and gas. This finely pulverized coal may furnish the answer to both.

Tests Passed

Face-powder-fine coal has successfully passed laboratory and pilot-plant tests, and is to be tried out in both building heating and in power plants. The heating experiments will be tested by a commercial company in Baltimore in heating homes and office buildings. The power tryout will be in two giant railway locomotives now under construction. The locomotives will be powered by gas-turbine engines, but these gas-turbines burn coal instead of the customary liquid fuel.

Construction of a coal-burning gas-turbine engine does not present especially difficult problems in itself; the problem is putting an automatic system on the locomotive to crush, dry and pulverize the fuel and deliver it into the combustion chamber. Another problem is the removal of the non-combustible particles

in the combustion products, the so-called fly-ash.

Coal, of course, can be converted in large part into combustible gases by long-used methods, and the gases used to power the gas turbines. This, however, is an expensive process and one that can not easily be adapted to use on a locomotive. The important new development includes a method of pulverizing lump coal in the locomotive, delivering it into the firebox, and insuring complete combustion.

The two coal-burning gas-turbine locomotives being built, which will be on the rails in 1948, carry all necessary equipment for converting ordinary lump coal into power. They will load with coal at ordinary railroad coal chutes. Wayside stations to deliver pulverized coal are not thought advisable because their use would confine the new locomotives to trackage where the stations were erected. These locomotives will also have storage capac-

ity to hold the fly-ash until proper disposal sites are reached.

The process of pulverizing the coal on these locomotives is of particular interest. Coal can be pulverized mechanically, of course, but the process is not satisfactory for use on locomotives, largely because of space limitation. The method that will be used is the so-called air-operated "coal atomizer" system.

It is a relatively simple process, resembling one used in the preparation of certain puffed breakfast cereals. The coal atomizer was first used, it is claimed, at the Institute of Gas Technology, Chicago, to produce finely pulverized coal for gasification. It is a device that requires about one pound of air for a pound of coal, the air being under pressure about 80 pounds per square inch higher than the combustor pressure.

Development of Locomotives

The development of the coal-burning gas-turbine locomotives is under the Locomotive Development Committee of Bituminous Coal Research, Inc., in Baltimore. The director of research is John I. Yellott, with Charles F. Kottcamp as as-



FLOWING COAL—"Coal atomizer" and attrition chamber are being examined by John I. Yellott, director of research, and W. N. McDaniel of the Locomotive Development Committee of Bituminous Coal Research Laboratory at Johns Hopkins University

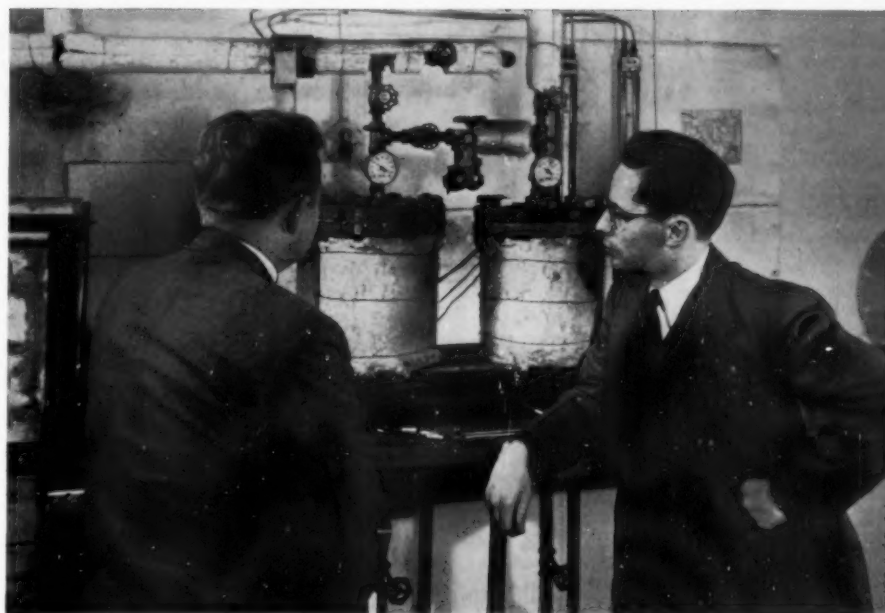
sistant. The committee itself is composed of the chief executives of six leading coal-burning railroads and three major coal producers. It is logical that these interests constitute the membership; the railroads and the coal industry are each other's best customers.

The coal atomizer consists of a nozzle through which is passed air under pressure and coal that has been crushed and dried. As the coal particles leave the nozzle, and the pressure is reduced, they burst with internal explosions which take place when the air entrapped within the pores of the coal is suddenly relieved of pressure. Because of its simplicity and lightness, the device is well suited for use on the locomotives, and it is the best coal-pulverizing method yet developed.

Problems of Burning

After pulverization, the fuel passes on to the combustion chamber. The actual burning of coal under pressure presented special problems of its own. In this, the Battelle Memorial Institute in Columbus, Ohio, made extensive contributions. This research and testing laboratory, serving industry, is among several institutions that played a part in the development of equipment for the new locomotives. Included also are the Johns Hopkins University, Purdue University, the Institute of Gas Technology in Chicago, and several makers of gas-turbine engines and locomotive builders.

The Battelle combustion chamber is the so-called vortex type. Air, laden with the finely pulverized coal, is driven into a cylindrical tube through a series of vanes which causes the air to spin vigorously as it passes toward a centrally located outlet. The action produces a rotating fuel bed suspended in rapidly rotating air. Ignition is started by a small pilot gas flame, which can be turned off once



IGNITION TEST—Test to determine the possibility of spontaneous ignition of coal when stored under pressure is witnessed by Mr. Yellott and his assistant director.

burning is under way.

The removal and disposition of the fly-ash from the products of combustion are of the utmost importance. If the fly-ash passes through the turbine vanes, serious abrasion is caused. Under tests already made, small cyclone separators made by the Aerotec Company and the Thermix Engineering Company, both of Greenwich, Conn., produced satisfactory results.

Provisions for Ash

Special compartments to hold the removed fly-ash will be provided on the locomotives. If the ash were allowed to discharge into the air from the speeding locomotive, it would be gathered up by the air-conditioning systems of the following passenger cars and would clog up the equipment. If compacted and discharged as pellets, a hazard would be created.

This revolutionary type of locomotive, which will use a plentiful type of fuel, is expected to lower main-line operating costs to one-half that of diesel-electric power plants, and will cost about the same to build. It is a great saver on lubricating oil, and gas-turbines consume no water.

The commercial building-heating try-out in Baltimore, in which finely pulverized bituminous coal will be used as fuel, does not plan to sell coal but to sell heat, on an annual contract. The necessary furnaces and equipment will be operated by

the company and not by the customer.

After installations are made, the company will do all maintenance and servicing. The pulverized coal will be delivered as needed in tank trucks, like oil, and run into the building through hose. The powdery ash resulting from the combustion will be taken away by the fuel delivery trucks.

For burning the pulverized coal, there is a special furnace, although some old furnaces can be converted, it is claimed. There is a storage tank for fuel, and one for ashes and equipment for air pressure. The house-size special furnace is a vertical sheet-metal cylinder lined with refractory material. Top-mounting of the powdered coal-burner provides for down-firing, after ignition by a gas pilot and sparkplug. The entire system is clean, and gives smokeless combustion.

Science News Letter, April 12, 1947

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VOLCANOLOGY

Iceland's Hekla Among Most Active Volcanoes

See Front Cover

➤ HEKLA, the "back gate to hell," as it was called in medieval Iceland, is one of the world's most active volcanoes. Its recorded history begins in the year A. D. 1114, when there was a rain of sand in the winter. Although the main crater has been on a vacation since 1878, there was an eruption through a subsidiary vent in 1913.

Hekla's greatest recorded eruption occurred just over a century ago, when the mountain disgorged lava and spewed up hot ashes over a period of seven months. Total volume of the ash was estimated at nearly half a billion cubic yards. Some of it, borne on winds in the upper air, was carried as far as western Germany.

The worst danger from Iceland's volcanoes is not the direct threat of lava rivers and ash showers, but the chance of the hot lava coming into contact with snow and ice fields and melting them into disastrous floods.

Science News Letter, April 12, 1947

ASTRONOMY

New Ninth Magnitude Comet Spotted Near North Star

➤ A NEW COMET is in the vicinity of the north star. Of the ninth magnitude, it is too faint to be seen with the naked eye or binoculars, but may be picked up with a small telescope. The comet will be named after its discoverer, Dr. Antonin Becvar, director of the new modern astrophysical observatory near Skalnaté Pleso (Rocky Lake) in Czechoslovakia.

Spotted in the constellation of Draco, the dragon, the diffuse object moved rapidly across the northern sky into the constellation of Camelopardus, the giraffe. Astronomers and amateurs with telescopes available, both in this country and in Europe, are anxiously watching its flight. Comet Becvar, first spotted on March 27, was located several days later at the Students' observatory of the University of California at Berkeley.

First word of the comet was cabled by Dr. Elis Stroemgren of Copenhagen University Observatory, world astronomical information bureau, to Harvard College Observatory, clearing house for astronomical news in the western hemisphere.

Late last May a sixth magnitude comet

was found by another keen-eyed astronomer in Czechoslovakia, Ludmila Pajdusakova, also of this observatory. The comet was independently discovered by David Rotbart, Washington business man, so is known as the Pajdusakova-Rotbart Comet.

Science News Letter, April 12, 1947

AGRICULTURE

Fertilizer Does Not Kill Soil's Useful Earthworms

➤ SPRING gardening note:

You needn't hesitate about putting fertilizer on your soil for fear of killing the useful earthworms in it.

The rather widespread belief that fertilizers harm earthworms has been tested at the New Jersey Agricultural Experiment Station and found erroneous.

Samples of soil were taken from a plot of land on which a lespedeza crop had been grown for five years, with heavy applications of fertilizer each year. An earthworm census was taken from these samples, and the results interpreted in terms of an acre.

The count came out as approximately 1,320,000 earthworms per acre, all in the top 18 inches of soil.

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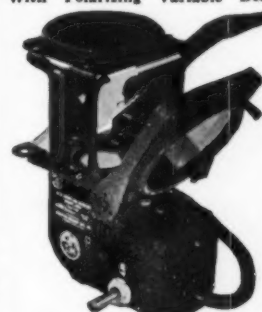
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Too Many Deer

► DEER, not so long ago a worry to conservationists because of their growing scarcity, are now a cause of headaches to wildlife administrators because of the very opposite condition—there are getting to be too many of them. A survey of the deer over-population problems in this country, by Prof. Aldo Leopold, Lyle K. Sows and David L. Spencer of the University of Wisconsin, is published in the March issue of the *Journal of Wildlife Management*.

There are deer in 47 of the 48 states of the Union, the report states, and 30 of these states report deer trouble of one kind or another. Even prairie states like Nebraska, Iowa and Illinois have spots where deer are too abundant for either their own good or the farmers' comfort.

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Biggest deer-problem areas, however, are in natural deer country: northern Wisconsin and Michigan, New Hampshire, New York and Pennsylvania, south central Texas and central Utah. Smaller deer-trouble spots dot the whole of the West. The only section where deer are present, yet do not make trouble for someone, is the Southeast.

Deer difficulties are chronic in some areas, but in most of them the animals stage, at irregular intervals, sudden growths in population which the three researchers term "irruptions". Largely freed of the regulating influences of such predatory animals as timber-wolves and pumas, and protected by both game laws and local sentiment, they feed and breed to a point where the authorities charged with their welfare are unable to cope with their numbers.

During such an irruption, the animals crop their best browse-plants closer and closer, finally wiping them out over considerable areas. Other plants, not relished by deer, take their place. Finally mass starvation ensues, frequently triggered by some weather disaster such as a heavy glaze storm or a prolonged blizzard. This reduces the deer population—but in the hard way.

So thoroughly has the "spare-the-deer" campaign of the early part of the century worked, that now it often works the wrong way. Sportsmen will not shoot does even when the welfare of the herd demands the removal of some of them. Indignant local sentiment has been known to prevent selective killing by wildlife administrators, even when mass starvation lay immediately ahead.

The only effective education to the new state of affairs, the three researchers conclude, is to take groups of interested citizens to over-browsed areas where deer are starving, and let them actually see for themselves.

Science News Letter, April 12, 1947

ORNITHOLOGY

Radar Waves' Effect On Birds' Direction

► DO RADAR WAVES upset birds' sense of direction? Dr. R. B. Roberts, physicist with the Carnegie Institution of Washington, is wondering.

During the war, he was at a point on the Virginia coast, conducting experiments that involved the use of radar. A number of times, when he and his companions saw a well-arrayed flock of wild ducks flying along, they gave them a "squirt" of radar rays. The ducks'

orderly formation would break up and the birds would fly wildly in all directions.

Dr. Roberts isn't certain that the radar did it, because there were other possible disturbing factors at work in the same area, such as small-caliber gunfire making a lot of noise. So he would like to hear from anyone else who had a similar experience with radar and flying birds.

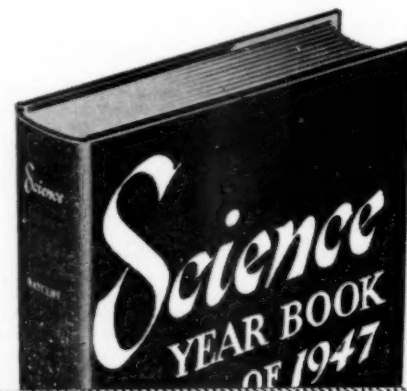
Science News Letter, April 12, 1947

HORTICULTURE

Chemicals Can Prevent Cracking of Cherries

► CRACKING of cherries after rains, through gorging with too much water, can be prevented in either of two ways, Prof. W. L. Powers and W. B. Bollen of Oregon Agricultural Experiment Station have discovered. Inclusion of a little anhydrous copper sulfate in the protective spray with which the trees are dusted will do it, and so will the application of about one pound of borax per tree, with the fertilizer. Similar good results have been obtained with prunes, they state, in reporting their results in *Science* (March 28).

Science News Letter, April 12, 1947



At last—applied science in peacetime

Concentrating on scientific contributions to a peaceful world, the articles in this sixth annual volume suggest answers to such questions as: Can men live to 150? Is it possible to farm in the ocean? When will we visit Mars? The latest development in Physics, Chemistry, Medicine, Aviation and other sciences are revealed in this book compiled by the foremost popular writer on scientific subjects.

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THE ATOMIC STORY—John W. Campbell—*Holt*, 297 p., illus., \$3. Written with humor and clarity by an author who believes that nuclear physics is a perfectly simple and natural thing.

BANTING'S MIRACLE—Seale Harris—*Lippincott*, 245 p., illus., \$3. A biography of a great man whose life was an inspiration to everyone, this tribute to the discoverer of insulin celebrates the twenty-fifth year of its use to restore diabetics to useful life.

THE CHEMICAL COMPOSITION OF FOODS—R. A. McCance and E. M. Widdowson—*Chemical Pub.*, 2nd ed. rev., 156 p., \$3.75. A revised up-to-date edition of a British text which American nutritionists and dietitians may find useful.

DISEASES OF THE NOSE AND THROAT—Charles J. Imperatori and Herman J. Burman—*Lippincott*, 3rd ed., 576 p., illus., \$12. The relation of vitamin deficiencies to mouth health and the use of penicillin and sulfadiazine are among new features in the latest edition of this textbook.

THE 4 FORESTS AND THE FUTURE OF THE SOUTH—I. F. Eldredge—*Chas. Latrop Pack Forestry Found.*, 65 p., illus., \$1. A thought-provoking discussion of forest types in the South, their relation to industrial advance, and the necessary continuous application of good forestry measures to ensure their long-term usefulness.

THE LIGHT METALS INDUSTRY—Josephine Perry—*Longmans*, 128 p., illus., \$2. An excellent introduction to the history, processes of manufacture, and methods of fabrication of aluminum and magnesium, this survey also outlines present research and future trends.

LILIES FOR EVERY OCCASION—Isabella Preston—*Orange-Judd*, 160 p., illus., \$2. Written for amateurs, preparation of the soil, planting the bulbs, and general care are described in detail. Its aim is to help gardeners grow as many species as possible and even to raise their own varieties from seed.

LOGIC FOR THE MILLIONS—A. E. Mander—*Philosophical Lib.*, 206 p., \$3. Textbook to teach skilled thinking; with practical examples, it shows how to avoid vague, muddled and feeble thinking, writing, or speaking.

MEET THE ATOMS—O. R. Frisch—*Wyn*, 226 p., \$3. With an introduction by Lise Meitner, this book explains this subject simply. It is an explanation of the background of experiment and discovery which led to the release of atomic power.

MEN AND THEIR MOTIVES—J. C. Flugel—*Int. Univ. Press*, 290 p., \$5. Series of essays on the social significance of personal attitudes as seen from the author's psychoanalytic viewpoint.

RECENT PROGRESS IN HORMONE RESEARCH, Vol. I—Gregory Pincus, ed.—*Academic Press*, 399 p., illus., \$7.50. These collected essays, Proceedings of the Laurentian Hor-

mone Conference, deal with neurohumoral relationships, chemistry and physiology of adrenal hormones, role of hormones in metabolic processes, and aspects of clinical endocrinology.

RECONVERSION FOR PEACE—Illinois Natural History Survey, Div. of Registration and Education—*Pub. by the Survey*, 36 p., paper, free. A statement of alterations in the state program to serve best the purposes of peace as well as an outline of research programs under way.

RUSSIAN-ENGLISH TECHNICAL AND CHEMICAL DICTIONARY—Ludmilla I. Callahan—*Wiley*, 794 p., \$10. Containing over 80,000 terms in a wide range of industries and professions, this book fills a long-felt need.

SCIENCE PLANS FOR TOMORROW; OUR WORLD OF SCIENCE, BOOK VIII—G. S. Craig and John Urban—*Ginn*, 448 p., illus., \$1.72. Planned for elementary schools, this text covers The Story of the Stars, This Restless Earth (volcanoes), Understanding the Weather, Co-operation for Better Health, Science and America's Future, and other topics written in a manner which challenges the imagination.

SCIENCE THROUGH EXPERIMENT: A General Science Workbook—Charles H. Lake, Louis E. Welton, and James C. Adell—*Silver*, 264 p., illus., \$1.24. Divided into 25 units, this text for junior or senior high schools applies learning by doing to general science.

A SURVEY OF HUMANISTIC WORK IN PROGRESS ON THE PACIFIC COAST—Hugh G. Dick—*Am. Council of Learned Soc.*, Bulletin 39, 100 p., paper, 25 cents. For this survey, the humanities include studies in language, literature, history, and philosophy, and in art, music and anthropology viewed historically; textbooks, dissertations and short essays are excluded.

THE TECHNOLOGY OF ADHESIVES—John Delmonte—*Reinhold*, 516 p., \$8. Because of the growing interest in the structural applications of plastics and composite laminated structures, this discussion of developments in adhesives is particularly timely.

THE UNCONQUERED PLAGUE; A Popular Story of Gonorrhea—Harry Wain—*Int. Univ. Press*, 119 p., paper, \$1.50. This frank discussion of an age-old plague emphasizes the fact that with present day advances in new drug therapy and an enlightened public health program thiscrippler of mankind may be eliminated.

WRITING SCIENTIFIC PAPERS AND REPORTS—W. Paul Jones—*Wm. C. Brown*, 125 p., paper, \$2.50. This clear discussion of how to present information, although written for engineering students, will be of value to any student who writes reports.

YOU AND THE UNITED NATIONS—Lois Fisher—*Childrens Press*, 40 p., illus., paper, 60 cents. Cartoons argue the idea and necessity of peaceful cooperation in "one world"; however, a few sensible explanations are included. Written for teenagers.

Science News Letter, April 12, 1947



ALFRED NORTH WHITEHEAD

ADVANCE ANNOUNCEMENT

WE deem it a privilege to announce the publication of the first new work in almost ten years by Professor Alfred North Whitehead, entitled

ESSAYS IN SCIENCE AND PHILOSOPHY

The twentieth century has produced few men whose achievements in the fields of mathematics and philosophy can surpass those of Alfred North Whitehead. His is not a mere technical excellence. It is a competence which, on occasion, is adorned by an unexcelled brilliance of vivid expression. The profound humility of the truly wise dignifies his utterances. A sparkling, somewhat ironic, humor shines through his discourse.

ESSAYS IN SCIENCE AND PHILOSOPHY will be published on April 29th. Due to present conditions, the edition will be necessarily limited. Your bookseller will take your order now for a copy to be delivered on publication. You may order, if you wish, directly from the publishers by sending your remittance of \$4.75 to the

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✿ **PERFUME** dispenser places a delicate line of fragrance on the skin or clothing with a ball point similar to that used in new fountain pens. This ball is at one end of a cartridge-shaped container, and in use its revolving inner surface comes in contact with a perfume jelly.

Science News Letter, April 12, 1947

✿ **BUILT-IN** home radio and sound system consists of four major parts: a portable tuner, an amplifier, a record player and one or more speakers. The small tuner, plugged into outlets in any room wired for it, is all that is visible because all other units are concealed in the walls or in other suitable places.

Science News Letter, April 12, 1947

✿ **POWDER** to mix with any paste wax, to make polishing easy, is a chemical preparation that glazes and hardens the wax quickly. The wax is applied as usual and then, while still moist, is sprinkled with the powder and rubbed to a finish with only a few light strokes.

Science News Letter, April 12, 1947

✿ **HANDBAG**, that looks like an archer's target, is made of concentric circles of coiled colored plastic. The colors, made in the plastic, can be refreshed with



a damp cloth. A zipper, shown in the picture, opens almost half-way round the circle.

Science News Letter, April 12, 1947

✿ **BABY ENGINE** for model airplanes weighs 22 ounces and develops one-half horsepower. It is an exact scaled model

of a full-sized airplane engine weighing 219 pounds that develops 85 horsepower. With tests now completed, this six-inch midget will be available next year.

Science News Letter, April 12, 1947

✿ **FIBER GLASS** bodies on three-wheeled electric runabouts, suitable for use in factories or at pleasure resorts, are molded in one piece, the material used being layers of fine glass fiber bonded together with a resin. These bodies are light in weight, strong, durable, and can withstand bumping.

Science News Letter, April 12, 1947

✿ **NEOPRENE** soles for sport shoes are claimed to be superior to natural crepe rubber soles. They wear longer, have little tendency to spread, and are highly resistant to oils, gasoline and heat.

Science News Letter, April 12, 1947

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